

ATTACHMENT A

Detailed Study Scope

I-66 (Inside) Multi-modal Study Scope

EXECUTIVE SUMMARY

The Virginia Department of Transportation (VDOT) seeks consultant assistance in identifying and evaluating a range of individual options that help address the present and long-term (up to 2040) mobility needs of the I-66 corridor, specifically the portion of the corridor from the Capital Beltway (I-495) east to the Virginia / District of Columbia border. The goal is to identify a range of current and visionary multi-modal and corridor management solutions (operational, transit, bike and pedestrian, in addition to highway improvements) that can be implemented to reduce highway and transit congestion and improve overall mobility within the corridor and along major arterial roadways and bus routes within the study area.

The study will examine a wide range of options including bus (local, express, Bus Rapid Transit [BRT]), Metrorail, transportation demand management (TDM), High Occupancy Vehicle (HOV), High Occupancy Toll (HOT), congestion pricing, managed lanes, active traffic management, bicycle and pedestrian corridor access and facility improvements, and highway improvements. Changes in occupancy level for HOV, changes to time of day of HOV, tolling, variable priced tolling, integrated corridor management measures, additional HOV lanes, HOT lanes, and additional general purpose lanes are options that will also be examined.

Existing studies, surveys, collected data and analyses will be used whenever possible. In particular, the study will build on the I-66 Transit / TDM Study completed by the Virginia Department of Rail and Transportation (DRPT) in 2009 and the Idea-66 Inside the Beltway Feasibility Study completed jointly by VDOT and the Federal Highway Administration (FHWA) in 2005. The Metropolitan Washington Council of Governments' (MWCOC) Version 2.3 travel demand model and regionally adopted land use forecasts (Round 8.0) will be used to project travel demand in the corridor and on major arterials.

The study will undertake objective technical analyses that address both demand and operational considerations. Results of the analyses of the various options will be displayed in a series of maps and other output to clearly show the effect of various options on levels of congestion and other evaluation criteria. Planning level implementation costs for each examined

option will be developed, and anticipated benefits will be reported with other performance evaluation criteria. The study will also identify potential ways to fund any options found to be feasible and beneficial that may be pursued.

PURPOSE

The Virginia Department of Transportation (VDOT) seeks expressions of interest from consulting firms who wish to assist VDOT and the Virginia Department of Rail and Public Transportation (DRPT) in conducting a study to address the mobility needs for the I-66 corridor between the Capital Beltway (I-495) and the District of Columbia boundary. The I-66 corridor is a major route used extensively by people traveling to employment centers in Fairfax County, Arlington County, or the District of Columbia. Based on travel time data, the segment inside the Beltway is experiencing increasing congestion. VDOT and DRPT seek to identify feasible transportation solutions to reduce congestion and improve overall mobility in the corridor and along arterial roadways serving the corridor. The general study area boundaries (to be refined at the start of the study) will be the District of Columbia (Potomac River) on the east, VA 244 (Columbia Pike) on the south, I-495 on the west, and VA 123 (Dolley Madison Boulevard / Chain Bridge Road) on the north. Facilities to be specifically examined will include, at a minimum, I-66 (both directions), Metrorail's Orange Line, arterial highways, bike and pedestrian trails, and bus routes on the study area highways. Study findings will recommend operational, transit, bike and pedestrian, and highway improvements for the near term (2012 – 2020) and long term (beyond 2020 up to 2040).

SCOPE

The study will identify and examine a wide range of potential complimentary and mutually supporting multi-modal transportation improvement options in the I-66 corridor including the following:

- bus service (local, express)
- Bus Rapid Transit (BRT), including potential locations for in-line or ramp stations
- bus-only lanes and bus technology improvements
- a corridor bus transfer center or hub to serve existing or proposed bus lines
- changes in Metrorail service including addition of a third or fourth Metrorail track
- impacts and opportunities due to implementation of the Metrorail "Silver Line" including expansion in the Dulles Corridor and proposed improvements to the East Falls Church Metrorail station area
- transportation demand management (TDM) measures as explored in the I-66 Transit / TDM Study

- integrated corridor management measures, including real-time parking information
- expanded use of active traffic management / ITS (intelligent transportation system) measures including real-time traffic and transit information and traffic signal coordination
- Shoulder use during weekday peak travel periods as explored in the I-66 Transit / TDM Study
- High Occupancy Vehicle (HOV) considerations, including changes to the HOV occupancy level, additional HOV lanes, the impact on congestion of current exemptions to HOV restrictions (hybrid vehicles, Dulles Airport traffic, and law enforcement vehicles) and changes to the time of day that HOV restrictions are in effect
- High Occupancy / Toll (HOT) lanes or conversion of I-66 inside the Beltway to a HOT lane facility
- roadway improvements (eastbound as well as westbound), including operational improvements or additional general purpose lanes
- tolling or variably priced tolling (congestion pricing)
- managed lanes
- trends in accident data and improvements to improve safety / incident management
- the existing bicycle and pedestrian trail network and areas for improvement (improved bike / pedestrian access to transit service, additional or enhanced bike parking needs, suggested locations for inter-modal transfer centers, and improved connectivity with / continuity of the Washington & Old Dominion Trail [W&OD Trail])
- bikesharing programs
- adaptive ramp metering
- proposals suggested by the study's Participating Agency representatives.

Existing studies, surveys, and analyses will be used whenever possible, especially the data and analyses on transit and TDMs in the I-66 Transit / TDM study completed by the Virginia Department of Rail and Transportation in 2009, the I-66 Inside the Beltway Feasibility Study completed jointly by VDOT and the Federal Highway Administration (FHWA) in 2005, and the on-going Washington Metropolitan Area Transit Authority (WMATA) regional transit system plan. The study will also include the examination of existing highway and transit operations and potential improvements on the parallel facilities inside the Beltway (US Route 29, US Route 50, and Washington Boulevard) to serve local as well as thru traffic.

The study will undertake objective technical analyses that address both demand and operational considerations. The baseline condition for this study will be the existing transportation network and services in the study corridor, as well as those improvements that are funded and in the process of being implemented, including recommendations from the Idea-66 Inside the Beltway Feasibility Study and the I-66 Transit / TDM Study. The Metropolitan Washington Council of Governments' (MWCOC) Version 2.3 travel demand model and regionally adopted land use forecasts (Round 8.0 Cooperative Forecast) will be used to project travel demand for the near-term and long-term timeframes in the corridor and on major arterials. Results of the analyses of the various options will be displayed in a series of maps and other output to clearly show the effect of various options on levels of congestion and other evaluation criteria. The planning level implementation costs for each option will be developed in 2011 dollars. Cost / benefit assessments will be conducted and reported with other performance evaluation criteria. Measures to keep stakeholders informed about the study will be a critical element of this study.

In addition to identifying and evaluating the above considerations, the consultant will:

- Identify existing and forecast “hot spots” or “choke points” (for highway, transit, bicycle, or pedestrian mobility) where congestion causes routine travel time delay of more than 15 minutes.
- Evaluate proposed improvements by addressing such factors as cost (implementation cost and annual operation / maintenance costs), stakeholder acceptance, right-of-way needs, environmental impacts, user costs (in the case of tolls or HOT lanes), anticipated changes in demand and improvements in travel time, level of safety and comfort (particularly for cyclists), and compatibility with adopted local comprehensive plans. Positive as well as negative impacts of the options will be identified.
- Develop and recommend time-phased strategies for pursuing those options improving corridor mobility in case any are selected for more detailed study and implementation. The strategies shall also identify potential funding sources or programs for the options.
- Develop and maintain timely study content for display on a publicly accessible study website.
- Participate in coordination meetings with governmental entities and transportation agencies.

- Orchestrate and participate in public meetings.
- Coordinate with VDOT staff and consultants conducting the I-66 National Environmental Policy Act (NEPA) Study outside the Capital Beltway (I-495 to US 15), and VDOT staff developing the I-66 Active Traffic Management effort.
- Prepare a study report documenting the study effort including data collected, analysis of data and conditions, identification and analysis of options, citizen input and suggestions, and a synopsis of meetings with stakeholders at any level.

STUDY MANAGEMENT

This study will be funded, managed and administered by VDOT. VDOT and DRPT will be the Lead Agencies for this study. Participating Agencies, with one designated representative and one alternate representative from each, will include Arlington, Fairfax, Loudoun and Prince William Counties as well as the Cities of Alexandria, Fairfax, Falls Church, Manassas and Manassas Park, the District of Columbia, WMATA, the Northern Virginia Transportation Commission (NVTC), the Potomac and Rappahannock Transportation Commission (PRTC), the Virginia Railway Express (VRE), and other agencies as the Study Manager may deem beneficial. Those representatives, designated by the appropriate jurisdiction or agency, will constitute the Participating Agency Representatives Committee (PARC) whose purpose will be to provide information, comments and recommendations for study performance to the Study Manager.

STUDY TIMELINE

An interim study report will be published in December, 2011, and the final report in May, 2012.

Deleted: This is envisioned to be a 12 month study following the issuance of a "Notice to Proceed".

OUTLINE OF SPECIFIC STUDY TASKS

Task 1: Finalize Work Plan

Based on guidance from the Study Manager, the consultant's initial task for this study is to develop an overall study approach, public outreach plans, study budget and study schedule. In consultation with the Study Manager, refine the study area boundaries. The outcome of Task 1 will be a work plan outlining the deliverables and study schedule, including all expected presentation materials, flyers and communications materials along with the consultant's cost estimate for study performance.

Task 2: Inventory Existing Corridor Mobility Options and Project Future Needs

The second task of this study will be to identify the mobility needs for the I-66 corridor inside the Capital Beltway up to the year 2040 and develop a list of improvement options for evaluation. The consultant should be familiar with the National Capital Region Transportation Planning Board's (TPB) approved 2010 Constrained Long Range Plan (CLRP). Adopted local comprehensive plans should also be reviewed for transportation improvements proposed in the corridor. The consultant will, at a minimum, identify regional factors influencing travel demand such as population growth patterns, land use, employment and demographic data, the existing highway network, existing transit service and ridership, existing bicycle and pedestrian trails and facilities (excluding sidewalks), and establish the framework for the analysis in Task 3. In developing the transportation options for analysis the consultant should consider the results of the 2007-2008 Metropolitan Washington Council of Governments (MWCOC) Household Travel Survey, the I-66 Corridor Transit / TDM study, the Fairfax Connector Transit Development Plan, the Northern Virginia Transportation Authority's (NVTA) "TransAction 2030" long range plan, the Loudoun County Transportation Plan, the Arlington County Master Transportation Plan, VDOT's Six Year Improvement Plan, VDOT's "I-66 Active Traffic Management Initiative", the WMATA Capital Improvement Program and its Regional Transportation System Plan, the Virginia Railway Express (VRE) Strategic Plan, the Commonwealth of Virginia's "VTrans2035" Long Range Multimodal Transportation Plan and the Statewide Surface Transportation Plan, the policy goals outlined in "The Governor's

Multimodal Strategic Plan for the Commonwealth of Virginia” (December, 2010), jurisdictional Transportation Development Plans (TDP), jurisdictional Transportation Master Plans, and other relevant agency and jurisdictional plans. Particular attention should be given to suggestions provided during the workshops for the “Idea-66” study, as well as new modal and multi-modal options. The consultant shall also coordinate with VDOT and staff of the NVTA concerning findings and recommendations in the NVTA “TransAction 2040 Plan” effort now underway. As the plans are reviewed, the consultant should identify proposed improvements to study area arterial roadways and rail lines serving, or impacted by, mobility in the I-66 corridor.

As an optional task, the consultant shall plan to conduct a series of travel time runs (three in the morning peak period in each direction) on three consecutive weekdays to obtain travel time data. This task, to be included in the consultant’s budget for the study, will be implemented at the direction of the Study Manager.

In addition to needs and improvement options gleaned from the above sources, the consultant shall seek the suggestions for corridor improvement from local elected officials, transportation commissions, and the general public. The consultant’s proposed method for acquiring this input (market research survey, citizen workshop, stakeholder interviews, postcard survey, telephone survey, or other method) will be outlined in the consultant proposal along with an explanation as to why the consultant feels the suggested approach will be successful in obtaining meaningful input.

Planning level implementation costs, in 2011 dollars, should be developed for all options to be evaluated.

The deliverable from this subtask will be a list of possible options (including cost estimates) for improving transit, highway, intelligent transportation systems (ITS), commuter parking, access to transit, ridesharing and TDM programs, bicycle, and pedestrian mobility. Discrepancies identified by the

consultant, such as “network gaps” or “emerging corridors”, should be highlighted for discussion with the Study Manager and should be mentioned in the final study report.

Task 3: Evaluation of Options

The primary objective in Task 3 is to test the options identified in Task 2 against various parameters to determine their ability to address the mobility needs of the corridor and adjacent / supporting local arterial streets. The consultant will use the Version 2.3 MWCOC travel demand model, along with any post-processing strategy approved by the Study Manager, to generate a series of maps and other outputs that will clearly show the effect of the identified transportation options on levels of congestion and other evaluation criteria. Weekday peak period conditions will be analyzed.

3.1 Evaluation Criteria

In evaluating the proposed transportation improvement options, the consultant shall use qualitative as well as quantitative criteria to identify positive as well as negative aspects of each option. Typical criteria for use are offered below, but should not be considered all inclusive or limiting.

- Improvement in travel time (reduced delay)
- Improvements in modal Level of Service (LOS)
- Activity Center Connections
- Multi-modal Choices
- Person Throughput
- Evacuation Route Enhancement
- Incident Clearance
- Intermodal Connections
- Management and Operations
- Need and urgency for Rehabilitation
- Compatibility with Local Transportation Plans
- Land Use Support and enhancements / support to Transit Oriented Development (TOD)
- Improved Bicycle and Pedestrian Travel and transit accessibility Options (safety, comfort, LOS)
- Reduced Roadway Congestion

- Safety improvement (all modes)
- Cost Sharing and Other Funding Mechanisms
- Freight Movement
- Provide an Integrated Multi-modal Transportation System
- Performance evaluation criteria adopted by the NVTa in accordance with requirements of the Commonwealth's 2010 biennial budget bill;
- Improve Mobility
- Improve Accessibility
- Improve Sustainability
- Improve carpool / vanpool ride-matching services
- Enhance publicly available real-time travel and transit information
- Improve interface / connectivity with other modes
- Improve Transportation and Land Use Linkage
- Protect the Environment
- Reduce greenhouse gases
- Enhance integrated corridor management
- Improve Active Traffic Management measures and services

The consultant will use the US Department of Transportation's guidance on cost / benefit analysis issued in reference to the Transportation Investments Generating Economic Recovery (TIGER) Grant application, issued in May of 2009, to establish a set of values for each option. Traffic forecasts and analyses should be developed in a manner consistent with the Federal Highway Administration's April 12, 2010, Guidance on the Application of Travel and Land Use Forecasting. The cost / benefit assessment will be added to the other performance evaluation criteria.

The deliverable for Task 3.1 is a report showing the results of the evaluation – the positive and negative aspects of each option evaluated.

3.2 Development of Level of Service (LOS) Maps or Graphics Showing Network Performance

One of the most important outputs from the evaluation will be LOS maps for the transportation options evaluated above. LOS maps should be prepared for highway, rail, bus and bicycle travel on diversion routes (US 29, US 50 and VA 237 -Washington Boulevard) as well as for I-66. These maps or graphics should show the change resulting from the options in such factors as average delay, average speed, peak period travel times, volume-to-capacity ratio, or similar measures in order to portray the impacts (both positive as well as negative) of implementing the options.

The consultant should review the methodology and results of the DRPT I-66 Transit / TDM Study (which provides a forecast of conditions to 2030) in the development of the transit LOS maps for the 2040 timeframe. The consultant will map bicycle LOS in terms of connectivity with and access to destinations and multimodal facilities throughout the study area. An explanation of the bicycle LOS method, safety analysis tool, or model used will be provided to the Study Manager and included in the final study report. The network should include the Northern Virginia trail network, local jurisdiction bicycle and pedestrian master plans (Arlington and Fairfax Counties as well as the City of Falls Church), bicycle route maps and all existing and planned pedestrian and bicycle facilities (excluding sidewalks). The consultant should identify gaps and constraints in the network on the map and recommend options for improvement.

The consultant will develop a usage map for park and ride lots (including rail station lots) in the I-66 corridor between US 15 (Haymarket) and the Potomac River showing lot capacity as well as typical daily usage. Updated park and ride capacity and usage data can be obtained through the VDOT “Northern Virginia Park and Ride Lot Feasibility Study”, WMATA, VRE, local jurisdictions, and the on-going statewide park and ride study.

The deliverable for Task 3.2 will be a series of Level of Service maps, by mode, indicating the projected mobility improvements resulting from the examined modal transportation options.

3.3 Other Factors to be Evaluated

In addition to the mobility benefits from the analyzed options as projected by travel demand modeling, the following other factors shall be evaluated at a conceptual level, in terms of positive and negative aspects, for each of the options considered:

- Right-of-way needed
- Changes to vehicle miles traveled (VMT) in the study area
- Economic impacts on study area neighborhoods, particularly minority or economically disadvantaged communities
- Direct impacts to public lands (parks, schools, community centers)
- Direct environmental impacts (storm water management / drainage, historical sites, potential for generating increased noise, air quality impacts, impacts on rare / endangered species or habitats)
- Conformity to adopted local jurisdiction comprehensive plans
- Estimated costs (operational and maintenance as well as construction / capital costs)

Task 4: Public Information and Participation

The consultant, with input from the VDOT Public Affairs staff, will implement a communications program, ensuring that communications are targeted effectively and are timely in their delivery. Communications outreach should, at a minimum, include state and local jurisdiction technical staff, local transportation agencies, elected officials, stakeholders (corridor roadway or transit users) and the general public within, or adjacent to, the study corridor. Particular attention will be paid to outreach efforts to inform minority and disadvantaged segments of the population. As mentioned in Task 2, the suggestions submitted by the public in the “Idea-66” workshops should especially be considered as the consultant develops a list of options and discusses the study with stakeholders. The consultant should propose a plan for conducting market research on the transportation improvement options. Such market research could involve surveys or other techniques suggested by the consultant and approved by the Study Manager in consultation with the Lead Agencies.

4.1 Plan and Schedule

The consultant should prepare a plan and schedule for public information / outreach meetings. At a minimum, the consultant should plan on an initial round of public meetings (one each in Arlington and Fairfax Counties) to receive stakeholder input and suggestions, on monthly meetings with the Lead Agencies and with the study’s PARC, on three presentations to the NVTA and to its

Jurisdiction and Agency Coordinating Committee (JACC), and five presentations to other groups of local elected officials and / or technical staff as arranged by the Study Manager. In addition to the initial public meetings, the consultant should plan on two more rounds of public meetings, at study milestones as directed by the Study Manager in coordination with the Lead Agencies. In each round of public meetings, one meeting shall be held at an Arlington County location that is within easy (5 – 10 minutes) walking distance of a Metrorail station and another meeting shall be held at a location in Fairfax County. Additional public involvement opportunities may become evident as the project progresses, and should be anticipated.

The consultant should describe its plan for advertising meetings to generate interest among stakeholders and the public.

The outcome of this task will be a communications and meeting schedule that supports and refines the planning in Task 1.

4.2 Study Website

VDOT's Northern Virginia District Public Affairs staff will create a web page on VDOT's website for this study. The consultant will provide the content, meeting schedules, and regular updates so that this website can be kept current.

Task 5: Potential Funding

The consultant shall develop an overview of potential ways to fund the implementation of beneficial options or solutions in case a decision is made to pursue such option(s) / solution(s).

Task 6: Internal Study Coordination

The consultant should plan for two rounds of review and revision for all study deliverables. At least one week prior to a meeting with the Study Manager, Lead Agencies or the PARC, the consultant will provide electronic copies of any

deliverables to be reviewed. The number of copies of deliverables that the consultant should prepare for each review and meeting will be finalized at the start of this study.

Because the data, analysis, and findings of this study could be beneficial to studies involving the I-66 Corridor west of the Capital Beltway, the consultant should be plan on monthly coordination meetings with VDOT / DRPT staff or consultants involved in such other studies. The Study Manager may change the frequency of such coordination depending on the status and progress of such other studies.

Task 7: Final Report

Two study reports will be produced. An initial report documenting study assumptions, planned methodologies, outreach efforts, and study status shall be produced by December 2, 2011. The consultant shall compile and analyze the information from the previous tasks and submit a comprehensive draft final report to the Study Manager for approval. The target date for publishing the final report is May 4, 2012. The report will document the study process, methodologies used, options examined, analysis performed (including assumptions), the results of the analyses, and potential revenue sources. A separate report recording public comments received during the course of the study will also be prepared

Following Lead Agency approval of the draft report, the consultant will submit a final report to the Study Manager. The Consultant will provide one copy of the report in electronic format for publication on the VDOT website, one camera ready copy of the report, 100 copies of the report on compact disc (CD), and 25 printed and bound copies of the report.

AVAILABLE RESOURCES

The following resources are currently available online or will be provided to the consultant by the VDOT Study Manager during the study:

- Commonwealth of Virginia
 - VTRANS 2035
<http://www.vtrans.org>

- Governor's Multimodal Strategic Plan for the Commonwealth of Virginia (December, 2010)

http://vtrans.org/resources/strategic_plan_12_01_10%20final.pdf

- VDOT

- VDOT Northern Virginia Park and Ride Lot Feasibility Study, including data tables and GIS files

<http://www.virginiadot.org/projects/studynova-ParkRide-feas.asp>

- Northern Virginia Regional Bikeway and Trail Network Study

<http://www.fhiplan.com/novabike/>

- VDOT Northern Virginia Centric Regional ITS Architecture

<http://www.vdot-itsarch.com/nova/novaindex.htm>

- VDOT Six-Year Improvement Program

<http://syip.virginiadot.org>

- Bicycling and Walking in Virginia

<http://www.virginiadot.org/programs/bk-default.asp>

- DRPT

- Link to the Commonwealth's ITS Plan / Program

<http://www.drpt.virginia.gov/studies/files/STR-DRPT%20ITS%20Plan%202009-08-29.pdf>

- Virginia Department of Rail and Public Transportation's Studies

<http://www.drpt.virginia.gov/studies/default.aspx>

- I-95 / 395 Transit TDM report
- I-66 Transit / TDM Report
- Transit ITS Strategic Plan

- White Paper "Interstate 66: An Integrated and Managed Corridor", May, 2010

- MWCOG

- Metropolitan Washington Area ITS Architecture

<http://www.mwcog.org/transportation/activities/operations/architecture.asp>

- MWCOG Version 2.3 (TP+ format) network files

- 2009 CLRP network
- CLRP Aspirations network
- TPB's Short-Term Needs Study
- Regional Transportation Improvement Program
<http://www.mwcog.org/clrp/projects/tip/>
- National Capital Region's Financially Constrained Long-Range Transportation Plan (CLRP)
<http://www.mwcog.org/clrp/>
- MWCOC's currently approved population, household and employment figures
- MWCOC Regional Activity Clusters GIS files
- MWCOC Mobility and Accessibility Study
<http://www.mwcog.org/transportation/activities/regional/>
- 1999 Performance of Regional High-Occupancy Vehicle Facilities on Freeways in the Washington Region: An Analysis of Travel Time. National Capital Region TPB.
- Link to TPB Vision
<http://www.mwcog.org/transportation/activities/vision/>
- WMATA
 - WMATA's Regional Bus Study Summary Document
<http://www.wmata.com/pdfs/planning/RegBusStudy.pdf>
 - WMATA's Capital Improvement Program (6-year and 10-year CIPs)
 - WMATA Strategic Plan
 - WMATA Transit Network Study
- Northern Virginia Transportation Commission (NVTC)
 - Final Report on the Development of a Continuing Process for Monitoring Performance Data on Transit-related ITS Investments
http://www.thinkoutsidethecar.org/pdfs/monitor_performance_its_investments.pdf
- Virginia Railway Express (VRE)
 - VRE Strategic Plan
http://www.vre.org/about/strategic/strategic_plan.htm

- Local Comprehensive Plans and Transportation Elements
 - Arlington County Master Transportation Plan
http://www.arlingtonva.us/departments/EnvironmentalServices/dot/planning/mplan/mtp/MTP_Draft.aspx
 - Arlington County 2035 Transportation Demand Management Plan
 - Arlington County General Land Use Plan and adopted Sector Plans
 - Fairfax County Transportation Plan
 - Fairfax County Bicycle Route Map
 - Fairfax County Park and Ride Study (2008)
 - Development of an Advanced Public Transportation Plan for the Fairfax Connector Bus System
- Base GIS maps from VDOT, WMATA, VRE, local jurisdictions and other agencies